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Conference Abstract

State of the Art in Computational Bioacoustics and Machine Learning: How far have we come?

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Abstract

Terrestrial bioacoustics, like many other domains, has recently witnessed some transformative results from the application of deep learning and big data (Stowell 2017, Mac Aodha et al. 2018, Fairbrass et al. 2018, Mercado III and Sturdy 2017). Generalising over specific projects, which bioacoustic tasks can we consider "solved"? What can we expect in the near future, and what remains hard to do? What does a bioacoustician need to understand about deep learning? This contribution will address these questions, giving the audience a concise summary of recent developments and ways forward. It builds on recent projects and evaluation campaigns led by the author (Stowell et al. 2015, Stowell et al. 2018), as well as broader developments in signal processing, machine learning and bioacoustic applications of these. We will discuss which type of deep learning networks are appropriate for audio data, how to address zoological/ecological applications which often have few available data, and issues in integrating deep learning predictions with existing workflows in statistical ecology.

Keywords

audio, sound, machine learning, deep learning, bioacoustics

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